Space Weather Forecast

Issued on Friday 4 October 2024 at 01:30 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Moderate flares expected, chance of isolated Strong flares. Minor-Moderate Geomagnetic storms likely, Chance Strong storms days 3 and 4 (5th and 6th Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been High, with the background level solar activity just below Moderate Class level and several M-class flares occurring. The largest flare was a Strong flare observed at 03/1218 UTC, which originated from a geomagnetically complex region near south-centre disc.

There are currently eight active numbered sunspot regions on the Earth-facing disc. The most complex region are located in the southwest quadrant, with two delta spots present.. The largest region is close to the northeast limb, but exact classification remains difficult due to its viewing angle. The remaining numbered sunspot regions are smaller and appear to be relatively benign. However, a new region emerging from the east limb appears to have the potential to be magnetically complex.

A filament eruption (arc of plasma material) was observed 03/0630 UTC in coronagraph imagery, close to a sunspot region located near the northeast limb. This has produced a coronal mass ejection (CME) off the northeast limb, which has been analysed as missing Earth.

The Strong flares on 01 and 03 Oct produced CME's, both with an Earth-directed component expected later in the period.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of a slow regime. Solar wind speeds ranged between approximately 310 and 390 km/s. The Interplanetary Magnetic Field remained mostly at weak levels, only briefly touching moderate levels. The north-south component also remained at weak values. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Moderate, with further Moderate class flares expected and a chance of isolated Strong flares occurring, these most likely originating from the

---

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

complex regions in the southwest.

Solar Wind / Geomagnetic Activity: The expected glancing CME from 29 Sep appears to have missed Earth. A glancing blow from a CME ifrom the 1st Oct s likely on days 1 or 2 (04-05 Oct). The arrival of another CME , from the 3rd Oct, is more confidence, arriving either late on the 5th or early on the 6th Oct.

Quiet geomagnetic conditions are expected at first, increasing Minor to Moderate storms levels at times from late today or early tomorrow and through the rest of the period, due to the arrivals of the CME;s. There is also a chance of Strong storm conditions occurring, mainly from late on day 3 (5th) into day 4 (6th), with a slight chance of isolated Severe storm intervals.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels, with a slight chance of rising above should further notable flares occur during the forecast period.

Geomagnetic Storms

Geomagnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	50	70	80	80
Strong	G3	No	10	30	50	50
Severe	G4	No	1	5	20	20
Extreme	G5	No	1	1	5	5

Radio Blackouts - X-Ray Flares

X-Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 (M Class)	Yes	85	85	85	85
Very Active	R3-R5 (X Class)	Yes	35	35	35	35

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	20	20	20	20
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.